

AMENDMENTS**In the Claims**

Claims 23-35 were previously canceled.

Please amend claims 1, 7, 20, 22, 36, and 41 as shown herein.

Please add new claims 48-50 as shown herein.

Claims 1-22 and 36-50 are pending and are listed following:

1. (currently amended) An antenna element, comprising:

a front plate that includes slots configured for wireless communication signal transfer;

a dielectric configured to regulate a cutoff wavelength of the antenna element;

a channel guide coupled to the front plate and configured to confine the dielectric in a position that aligns the dielectric with the slots in the front plate, the channel guide including a first sidewall and a second sidewall that are each configured to prevent communication signal interference between the antenna element and an adjacent antenna element; and

a back plate coupled to the channel guide and configured to enclose the dielectric within the channel guide to form an enclosed dielectric channel.

2. (original) An antenna element as recited in claim 1, wherein the dielectric is formed from a polystyrene material.

1 3. **(original)** An antenna element as recited in claim 1, wherein the
2 dielectric includes a center conductive section and one or more cross-sections.

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4 4. **(original)** An antenna element as recited in claim 1, wherein the
5 dielectric includes a center conductive section and one or more cross-sections
6 transverse to the center conductive section.

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8 5. **(original)** An antenna element as recited in claim 1, wherein:
9 the dielectric includes a center conductive section and one or more
10 cross-sections perpendicular to the center conductive section;
11 the center conductive section extends lengthwise within the enclosed
12 dielectric channel; and
13 the one or more cross-sections are spaced within the enclosed dielectric
14 channel to align with the slots in the front plate.

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16 6. **(original)** An antenna element as recited in claim 1, wherein:
17 the dielectric includes a center conductive section and one or more
18 cross-sections perpendicular to the center conductive section;
19 the center conductive section extends lengthwise within the enclosed
20 dielectric channel between a first row of the slots and a second row of the slots;
21 and
22 the one or more cross-sections are spaced within the enclosed dielectric
23 channel to align with the slots in the front plate.

1 7. (currently amended) An antenna element as recited in claim 1,
2 ~~wherein the channel guide includes at least a first sidewall and a second sidewall,~~
3 ~~and wherein the first sidewall and the second sidewall are each configured to~~
4 ~~prevent communication signal interference between~~ at least one of the first
5 sidewall or the second sidewall is a common sidewall of the antenna element and
6 an the adjacent antenna element.

7
8 8. (original) An antenna element as recited in claim 1, wherein the
9 front plate further includes the slots spaced apart a distance that is substantially
10 equivalent to an antenna element wavelength divided by two.

11
12 9. (original) An antenna element as recited in claim 1, wherein the
13 front plate further includes a first row of one or more of the slots and a second row
14 of one or more of the slots.

15
16 10. (original) An antenna element as recited in claim 1, wherein the
17 front plate further includes a first row of one or more of the slots and a second row
18 of one or more of the slots, and wherein the slots in each of the first row and the
19 second row are spaced apart a distance that is substantially equivalent to an
20 antenna element wavelength divided by two.

1 **11. (original)** An antenna element as recited in claim 1, wherein the
2 front plate further includes a first row of one or more of the slots and a second row
3 of one or more of the slots, and wherein the slots in the first row are offset from
4 the slots in the second row.

5
6 **12. (original)** An antenna element as recited in claim 1, wherein:
7 the front plate further includes a first row of one or more of the slots and a
8 second row of one or more of the slots; and
9 the slots in the first row are offset from the slots in the second row in a
10 direction parallel to the first row and a distance that is substantially a length of a
11 slot.

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13 **13. (original)** An antenna element as recited in claim 1, wherein the
14 slots in the front plate are substantially rectangular.

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16 **14. (original)** An antenna element as recited in claim 1, wherein the
17 slots in the front plate are notched slots.

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19 **15. (original)** An antenna element as recited in claim 1, wherein the
20 slots in the front plate are offset slots.
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1 **16. (original)** An antenna element as recited in claim 1, wherein the
2 slots in the front plate are offset slots, and wherein an offset slot is substantially
3 rectangular having an offset section formed about a transverse center of the offset
4 slot.

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6 **17. (original)** An antenna element as recited in claim 1, further
7 comprising a connection system configured to communicatively couple the
8 antenna element to an antenna system component.

9
10 **18. (original)** An antenna element as recited in claim 1, further
11 comprising:

12 an RF connection system configured to communicatively couple the
13 antenna element to an antenna system component; and

14 a fastener component configured to communicatively couple the dielectric
15 to the RF connection system without an RF connector.

16
17 **19. (original)** An antenna assembly comprising one or more antenna
18 elements as recited in claim 1.

19
20 **20. (currently amended)** An antenna assembly comprising antenna
21 elements each formed as a waveguide enclosing a solid dielectric, each antenna
22 element including a channel guide to prevent signal interference between a first
23 antenna element and a second antenna element.

1 **21. (previously presented)** An antenna assembly as recited in
2 claim 20, wherein:

3 the solid dielectric includes a center conductive section and one or more
4 cross-sections perpendicular to the center conductive section;

5 the center conductive section extends lengthwise within the waveguide; and

6 the one or more cross-sections are spaced within the waveguide to align
7 with communication signal transfer slots in the waveguide.

8
9 **22. (currently amended)** An antenna assembly as recited in
10 claim 20, wherein the waveguide includes:

11 a front plate having communication signal transfer slots, ~~the~~ a channel
12 guide coupled to the front plate and configured to confine the solid dielectric in a
13 position that aligns the solid dielectric with the communication signal transfer
14 slots; and

15 a back plate coupled to the channel guide to enclose the solid dielectric
16 within the channel guide.

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18 **23-35. (canceled)**
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1 **36. (currently amended)** A method, comprising:
2 forming a front plate of an antenna assembly with slots configured to
3 wirelessly transfer communication signals;
4 forming a channel guide of an antenna element, the channel guide including
5 at least a first sidewall and a second sidewall that are each configured to prevent
6 communication signal interference between the antenna element and an adjacent
7 antenna element;
8 forming a back plate of the antenna assembly; and
9 attaching the front plate, the channel guide, and the back plate together to
10 form the antenna element of the antenna assembly, the antenna element being
11 formed as a conductive channel that encloses a solid dielectric.

12
13 **37. (original)** A method as recited in claim 36, further comprising
14 forming the solid dielectric to regulate a cutoff wavelength of the conductive
15 channel.

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17 **38. (original)** A method as recited in claim 36, further comprising
18 forming the solid dielectric with a center conductive section and one or more
19 transverse cross-sections.

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21 **39. (original)** A method as recited in claim 36, further comprising
22 forming the solid dielectric with a center conductive section and one or more
23 cross-sections perpendicular to the center conductive section.

1 **40. (original)** A method as recited in claim 36, further comprising:
2 forming the solid dielectric with a center conductive section and one or
3 more cross-sections perpendicular to the center conductive section; and
4 positioning the solid dielectric such that the center conductive section
5 extends lengthwise within the conductive channel and the one or more
6 cross-sections are spaced to align with the slots in the front plate.

7
8 **41. (currently amended)** A method as recited in claim 36, wherein
9 forming the channel guide includes forming the channel guide of the antenna
10 element such that at least one of the first sidewall or the second sidewall is a
11 common sidewall of the antenna element and the adjacent antenna element with at
12 ~~least a first sidewall and a second sidewall, and wherein the first sidewall and the~~
13 ~~second sidewall are each configured to prevent communication signal interference~~
14 ~~with an adjacent conductive channel.~~

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16 **42. (original)** A method as recited in claim 36, wherein forming the
17 front plate includes forming the front plate with a first row of one or more of the
18 slots and a second row of one or more of the slots.

19
20 **43. (original)** A method as recited in claim 36, wherein forming the
21 front plate includes forming the front plate with a first row of one or more of the
22 slots and a second row of one or more of the slots, and wherein the slots in the first
23 row are offset from the slots in the second row.
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1 **44. (original)** A method as recited in claim 36, wherein forming the
2 front plate includes forming the front plate with the slots that are substantially
3 rectangular.

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5 **45. (original)** A method as recited in claim 36, wherein forming the
6 front plate includes forming the front plate with the slots that are offset slots.

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8 **46. (original)** A method as recited in claim 36, wherein forming the
9 front plate includes forming the front plate with the slots that are offset slots, and
10 wherein each offset slot has an offset section formed about a transverse center of
11 the offset slot.

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13 **47. (original)** A method as recited in claim 36, further comprising
14 coupling the solid dielectric to an RF conductive trace of an RF connection system
15 without using an RF connector.

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17 Please add new claims 48-50 as follows:

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19 **48. (new)** An antenna assembly comprising antenna elements each
20 formed as a waveguide enclosing a solid dielectric, each antenna element including
21 a channel guide to separate the solid dielectrics of adjacent antenna elements.

1 **49. (new)** An antenna assembly as recited in claim 48, wherein:
2 the solid dielectric includes a center conductive section and one or more
3 cross-sections perpendicular to the center conductive section;
4 the center conductive section extends lengthwise within the waveguide; and
5 the one or more cross-sections are spaced within the waveguide to align
6 with communication signal transfer slots in the waveguide.

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8 **50. (new)** An antenna assembly as recited in claim 48, wherein the
9 waveguide includes:

10 a front plate having communication signal transfer slots, the channel guide
11 coupled to the front plate and configured to confine the solid dielectric in a
12 position that aligns the solid dielectric with the communication signal transfer
13 slots; and

14 a back plate coupled to the channel guide to enclose the solid dielectric
15 within the channel guide.
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